

Wes Marshall, Private Consultant

Bio

Wes Marshall is a leader in the field of laser safety. He was formerly in charge of the US Army Laser Safety Program and is now a private Consultant. He has over 50 peer reviewed publications and has evaluated hundreds of individual and unique laser systems. He serves on the ANSI Z136 COMMITTEE.

Abstract

Hazard Calculations Tutorial Using ANSI Z136.1 (2014)

There are major changes to both the maximum permissible exposure limit (MPE) calculations and the hazard classification accessible emission limit (AEL) in the American National Standard for Safe Use of Lasers Z136.1 (2014) from previous versions. Most of these changes are also reflected in the International Electro-Technical Commission Safety of Laser Products, Part 1, 60825-1 (2014). Changes include lowering the MPE values for many single pulsed lasers, while at the same time eliminating the need for a reduction in MPE for repeated exposure. Another change is an increase in the retinal MPE in the 1200 to 1400 nm wavelength band, which is offset by a new corneal MPE for these same wavelengths. The treatment of extended sources has been revised due to the consideration of a smaller retinal image diameter when assessing the hazards from pulsed lasers. In addition, the assessment of the hazards from rectangular and elliptical retinal images from extended source laser exposure has been clarified. Analysis software designed to provide hazard evaluation or classification using the ANSI Z136.1 (2007) or IEC 60825-1 (2007) will not provide valid results according to the current revisions. RLI's LAZAN Premium 6 software will perform hazard assessments using either the old or current versions of these standards.